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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/282,229	03/31/1999	ALESSANDRO FORIN	MS-77/5(1166	8320

23460 7590 09/21/2004

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EXAMINER	
HO, THE T	

ART UNIT	PAPER NUMBER
2126	

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/282,229	FORIN ET AL.	
	Examiner	Art Unit	
	The Thanh Ho	2126	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 May 2004* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4,6,7,9-12 and 14-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,6,7,9-12 and 14-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) ___ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5/4/2004* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. This action is in response to the amendment filed 5/4/2004.

2. Claims 1-2, 4, 6-7, 9-12 and 14-40 have been examined and are pending in the application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-2, 4, 6-7, 9-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roddy U.S Patent No. 6,678,880 in view of Gerard U.S Patent No. 6,092,079.

As to claim 1, Roddy teaches a system having a memory (associated memory, line 57 column 3) storing computer executable instructions supporting plural objects (objects, Fig. 5B) and a mutation interface (Inheritance Overviewer, line 39 column 5), said mutation interface (Inheritance Overviewer, line 39 column 5) comprising methods (operations, line 66 column 5) for mutating (manipulate the structure relationships of the objects, lines 35-36 column 5) any one of the plural objects (objects, Fig. 5B). Roddy does not explicitly teach a mutation object. However, Roddy's Inheritance Overviewer is in fact a container containing plurality of mutation objects, which can perform

mutations to any object such as adding a child object, creating a new object...(lines 53-65 column 5). In object oriented programming, a container is an object that contains plurality of objects. Therefore one of ordinary skill in the art would conclude that Roddy's Inheritance Overviewer is a mutation object. Roddy further does not explicitly changing information within an object and performing the method dynamically during runtime.

Gerard teaches an object-oriented system (object oriented programming, line 62 column 1) for changing an object configuration during runtime (an object update mechanism dynamically updates the configuration of a first object, lines 63-64 column 2) wherein the steps include providing a new implementation within the object (updates the configuration of a first object from a first class to a second class, lines 63-65 column 2), wherein the object includes a first method (method 430, Fig. 4) and a second method (method 431, Fig. 4) and an interface with a pointer (method table pointer 410, Fig. 4), changing the pointer from identification of the first method to identification of the second method (the method table pointer 410 is then changed to point to the methods of the new class, lines 28-30 column 7; pointer to method 430 being crossed out and new pointer to method 431 being used, Fig. 4). It would have been obvious to apply the teachings of Gerard to the system of Roddy because the system permits dynamic updating of persistent objects without passivating the objects and without changing the identity of the objects as disclosed by Gerard (lines 15-18 column 3).

As to claim 2, Roddy as modified further teaches each of plural objects comprises a table (interface that provides all of the object's properties and handlers,

lines 50-52 column 6), an interface corresponding to plural methods and an implementation of the methods (handlers that display the functions of the object, Fig. 4); a table pointer pointing to the interface (pointer to the location of the object, line 20-21 column 5); an interface pointer (local handlers, Fig. 9) for the methods to a corresponding implementation.

As to claim 4, Roddy as modified further teaches the interface comprises a Mutate Object method (methods of the RoundRect object, Fig. 9).

As to claim 6, Roddy as modified further teaches said mutation object mutates the pointer (pointers for the existing objects are modified accordingly, lines 8-9 column 6) to change the interface of the one object to a new interface (parent pointers to these new parent object are added, lines 5-6 column 6) corresponding to a new set of methods (the modification of the object's properties is also performed, lines 9-10 column 6).

As to claim 7, Roddy as modified further teaches the method of the mutation object is a Mutate Viable method (methods of the RoundRect object, Fig. 9).

As to claim 9, Roddy as modified further teaches the method of the mutation object is a Mutate Object method (methods of the RoundRect object, Fig. 9).

As to claim 10, Roddy as modified further teaches each object comprises a state register (persistence data file of an object, lines 63-64 column 4) storing a state of that object (storing object's properties and handlers, line 62 column 4); the method of the mutation object changes the contents of the state register (pointers for the existing

objects are modified accordingly, lines 8-9 column 6) so as to mutate the state of said one object.

As to claim 11, Roddy as modified further teaches the state register stores the value of a pointer (pointer to the location of the object, line 20-21 column 5) of the object.

As to claim 12, Roddy as modified further teaches a VTable pointer (pointer to the location of the object, line 20-21 column 5).

As to claim 14, Roddy as modified further teaches the mutation object comprises a Mutate_Object method (operations that change the properties of an object, line 66 column 5).

4. Claims 29-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roddy in view of Gerard, and further in view of Lundin U.S Patent No. 5,339,430.

As to claim 29, Roddy as modified does not explicitly teach the new implementation is a software update. Lundin teaches a system of binding software modules during runtime (Fig. 6) wherein the kernel 82 act as a mutation interface that receives a pointer from the software module 100 (pointer from class X_c of 100 to interface of kernel 82), and a pointer (pointer from kernel 82 to class X_c of 102) from kernel 100 to software module 102; the implementation corresponds to a software upgrade (updating of software, line 27 column 1). It would have been obvious to apply the teachings of Lundin to the system of Roddy because this provides a linked procedure call mechanism for dynamically binding separately and simultaneously

executable versions of software during operation of a computing system to allow transparent, uninterrupted updating of software as disclosed by Lundin (lines 23-27 column 1).

As to claim 30, Lundin further teaches new implementation is a higher speed driver (lines 23-39 column 1).

As to claim 31, Lundin further teaches new implementation comprises recently loaded code (code loaded from the new SW-UNIT 104, Fig. 6).

As to claim 32, Lundin further teaches new implementation comprises a different arithmetic algorithm (changing to a new software version, lines 40-42 column 1).

As to claim 33, Lundin further teaches the new implementation is a version of an algorithm (changing to a new software version, lines 40-42 column 1) where specific conditions are assumed to be true where the version is mutated back to a version when the conditions are no longer true (both of the old and new version of the software modules is presented during runtime, Fig. 6).

As to claim 34, Lundin further teaches some of the parameters of the method are assumed to be constant (old parameter values, lines 42-43 column 9).

As to claim 35, Lundin further teaches the version is generated by a compiler through constant folding (lines 38-51 column 9).

As to claim 36, Roddy as modified further teaches specific assumptions are made (pointer to the location of the object, line 20-21 column 5).

As to claim 37, Roddy as modified further teaches the assumption is the location of an object (pointer to the location of the object, line 20-21 column 5).

As to claim 38, Roddy as modified further teaches the assumption is the value of a field of the state of the object (storing object's properties and handlers, line 62 column 4).

As to claim 39, Lundin further teaches the version is generated through constant folding (lines 38-51 column 9).

As to claim 40, Lundin further teaches the version is generated through inlining (Fig. 6).

5. Claims 15-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roddy in view of Gerard, and further in view of Bak U.S Patent No. 6,510,437.

As to claim 15, Roddy does not explicitly teach synchronization of threads running in the object. Bak teaches a system of threads running in a synchronized operation to access a lock on a resource (lines 64-66 column 2). It would have been obvious to apply the teachings of Bak to the system of Roddy because this allows the thread to lock the resource for executing, preventing other threads from performing additional operations on the resource.

As to claim 16, Bak further teaches the synchronization comprises mutual exclusion (lock on the object, line 66 column 2).

As to claim 17, Bak further teaches the mutual exclusion prevents new threads from accessing the object while other threads running in the object are permitted to finish (lock is arranged that only the thread that has possession of the lock for an object is permitted to execute a method on that object, lines 46-48 column 2).

As to claim 18, Bak further teaches transactional synchronization (synchronization operations, line 1 column 3).

As to claim 19, Bak further teaches transactional synchronization rolls back the threads currently running in the one object and then permits mutation of the object (threads allows to perform additional operations, lines 1-2 column 3).

As to claim 20, Bak further teaches the synchronization comprises swizzling (threads allows to perform additional operations, lines 1-2 column 3).

As to claim 21, Bak further teaches swizzling comprises suspending thread running in the object, modifying the states of the suspended and reactivating the thread (lines 19-30 column 4).

As to claim 22, Bak further teaches thread states are swizzled between clean points whereby the thread becomes suspended at a clean point (lines 19-30 column 4).

As to claim 23, Roddy as modified further teaches plural objects (objects, Fig. 5B) comprises an interposition object (48, Fig. 7) formed by the mutation object mutating an object (lines 16-32 column 6) and a copied object (splice a new parent, lines 37-38 column 6) at least nearly identical to the particular object (lines 34-45 column 6), the particular object has a pointer to said copied object (pointer to the parent created, lines 5-7 column 6). Roddy does not explitcitly teaches a method of interposition between threads seeking the objects. Bak teach thread invoking the method to first synchronize with the object (lines 12-27 column 2). Note the discussion of claim 15 above for the reasons of combining references.

As to claim 24, Bak further teaches the interposition method comprises a filter (984, 986 and 988, Fig. 11).

As to claim 25, Bak further teaches the filter is a read-only filter (read boost counter 986, Fig. 11).

As to claim 26, Bak further teaches filter provides access based upon the identity of the requesting thread (assigned priority of thread 992, Fig. 11).

As to claim 27, Bak further teaches the copied object is a copy of the one particular object (splice a new parent, lines 37-38 column 6).

As to claim 28, Bak further teaches interposition object (48, Fig. 7) is formed by copying said one particular object and mutating the resulting copy (lines 16-32 column 6) while the copied object is the particular object (splice a new parent, lines 37-38 column 6).

Response to Arguments

6. Applicant's arguments filed have been fully considered but they are not persuasive.

Applicant argued that Roddy reference does not teach changing information within an object and performing the method dynamically during runtime (Remarks, last incomplete paragraph page 9 to first complete paragraph page 10). In response, the applicant argued new limitations that were not claimed before. However, these limitations are still met by the cited references as disclosed in the claim rejection above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to The Thanh Ho whose telephone number is (571) 272-3762. A voice mail service is also available for this number. The examiner can normally be reached on Monday – Friday, 8:30 am – 5:00 pm.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Any response to this action should be mailed to:

Commissioner for Patents

P.O Box 1450

Alexandria, VA 22313-1450

Or fax to:

- AFTER-FINAL faxes must be signed and sent to (703) 872 - 9306.
- OFFICAL faxes must be signed and sent to (703) 872 - 9306.
- NON OFFICAL faxes should not be signed, please send to (571) 273 – 3762

TTH
September 9, 2004

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